

Exploring the Extreme			
2010 Science			
Standards of Learning			
Virginia Science			
Grade K			
Activity/Lesson	State	Standards	
Finding the Center of Gravity Using Rulers	VA	SCI.K.K.1.e	The student will conduct investigations in which nonstandard units are used to measure the length, mass, and volume of common objects;
Finding the Center of Gravity Using Rulers	VA	SCI.K.K.1.f	The student will conduct investigations in which observations and predictions are made for an unseen member in a sequence of objects;
Finding the Center of Gravity Using Rulers	VA	SCI.K.K.1.g	The student will conduct investigations in which a question is developed and predictions are made from one or more observations;
Finding the Center of Gravity Using Rulers	VA	SCI.K.K.4.e	The student will investigate and understand that the position, motion, and physical properties of an object can be described. Key concepts include relative positions and speed of objects.
Finding the Center of Gravity Using Rulers	VA	SCI.K.K.10.b	The student will investigate and understand that materials can be reused, recycled, and conserved. Key concepts include changes can be observed and measured.
Exploring the Extreme			
2010 Science			
Standards of Learning			
Virginia Science			
Grade 1			
Activity/Lesson	State	Standards	
Finding the Center of Gravity Using Rulers	VA	SCI.1.1.1.b	The student will conduct investigations in which observations are made from multiple positions to achieve a variety of perspectives and are repeated to ensure accuracy;
Finding the Center of Gravity Using Rulers	VA	SCI.1.1.1.f	The student will conduct investigations in which inferences are made and conclusions are drawn about familiar objects and events;
Finding the Center of Gravity Using Rulers	VA	SCI.1.1.1.g	The student will conduct investigations in which a question is developed from one or more observations;
Finding the Center of Gravity Using Rulers	VA	SCI.1.1.1.j	The student will conduct investigations in which simple investigations and experiments are conducted to answer questions.

Finding the Center of Gravity Using Rulers	VA	SCI.1.1.2.c	The student will investigate and understand that moving objects exhibit different kinds of motion. Key concepts include pushes or pulls can change the movement of an object.
Exploring the Extreme			
2010 Science			
Standards of Learning			
Virginia Science			
Grade 2			
Activity/Lesson	State	Standards	
Finding the Center of Gravity Using Rulers	VA	SCI.2.2.1.a	The student will conduct investigations in which observations and predictions are made and questions are formed;
Finding the Center of Gravity Using Rulers	VA	SCI.2.2.1.g	The student will conduct investigations in which conditions that influence a change are identified and inferences are made;
Finding the Center of Gravity Using Rulers	VA	SCI.2.2.1.k	The student will conduct investigations in which observations and data are communicated;
Finding the Center of Gravity Using Rulers	VA	SCI.2.2.1.l	The student will conduct investigations in which simple physical models are designed and constructed to clarify explanations and show relationships; and
Exploring the Extreme			
2010 Science			
Standards of Learning			
Virginia Science			
Grade 3			
Activity/Lesson	State	Standards	
Finding the Center of Gravity Using Rulers	VA	SCI.3.3.1.b	The student will plan and conduct investigations in which predictions are formulated using a variety of sources of information;
Finding the Center of Gravity Using Rulers	VA	SCI.3.3.1.g	The student will plan and conduct investigations in which questions are developed to formulate hypotheses;
Finding the Center of Gravity Using Rulers	VA	SCI.3.3.1.h	The student will plan and conduct investigations in which data are gathered, charted, graphed, and analyzed;
Finding the Center of Gravity Using Rulers	VA	SCI.3.3.1.j	The student will plan and conduct investigations in which inferences are made and conclusions are drawn;
Finding the Center of Gravity Using Rulers	VA	SCI.3.3.1.k	The student will plan and conduct investigations in which data are communicated;
Finding the Center of Gravity Using Rulers	VA	SCI.3.3.1.l	The student will plan and conduct investigations in which models are designed and built

Finding the Center of Gravity Using Rulers	VA	SCI.3.3.1.m	The student will plan and conduct investigations in which current applications are used to reinforce science concepts.
Finding the Center of Gravity Using Plumb Lines	VA	SCI.3.3.1.k	The student will plan and conduct investigations in which data are communicated;
Finding the Center of Gravity Using Plumb Lines	VA	SCI.3.3.1.l	The student will plan and conduct investigations in which models are designed and built
Finding the Center of Gravity Using Plumb Lines	VA	SCI.3.3.1.m	The student will plan and conduct investigations in which current applications are used to reinforce science concepts.
Changing the Center of Gravity Using Moment Arms	VA	SCI.3.3.1.b	The student will plan and conduct investigations in which predictions are formulated using a variety of sources of information;
Changing the Center of Gravity Using Moment Arms	VA	SCI.3.3.1.g	The student will plan and conduct investigations in which questions are developed to formulate hypotheses;
Changing the Center of Gravity Using Moment Arms	VA	SCI.3.3.1.h	The student will plan and conduct investigations in which data are gathered, charted, graphed, and analyzed;
Changing the Center of Gravity Using Moment Arms	VA	SCI.3.3.1.j	The student will plan and conduct investigations in which inferences are made and conclusions are drawn;
Changing the Center of Gravity Using Moment Arms	VA	SCI.3.3.1.k	The student will plan and conduct investigations in which data are communicated;
Changing the Center of Gravity Using Moment Arms	VA	SCI.3.3.1.l	The student will plan and conduct investigations in which models are designed and built
Changing the Center of Gravity Using Moment Arms	VA	SCI.3.3.1.m	The student will plan and conduct investigations in which current applications are used to reinforce science concepts.
Exploring the Extreme			
2010 Science			
Standards of Learning			
Virginia Science			
Grade 4			
Activity/Lesson	State	Standards	
Finding the Center of Gravity Using Rulers	VA	SCI.4.4.1.a	The student will plan and conduct investigations in which distinctions are made among observations, conclusions, inferences, and predictions;
Finding the Center of Gravity Using Rulers	VA	SCI.4.4.1.e	The student will plan and conduct investigations in which predictions and inferences are made, and conclusions are drawn based on data from a variety of sources;

Finding the Center of Gravity Using Rulers	VA	SCI.4.4.1.g	The student will plan and conduct investigations in which constants in an experimental situation are identified;
Finding the Center of Gravity Using Rulers	VA	SCI.4.4.1.i	The student will plan and conduct investigations in which data are collected, recorded, analyzed, and displayed using bar and basic line graphs;
Finding the Center of Gravity Using Rulers	VA	SCI.4.4.2.b	The student will plan and conduct investigations in which changes in motion are related to force and mass;
Finding the Center of Gravity Using Plumb Lines	VA	SCI.4.4.1.a	The student will plan and conduct investigations in which distinctions are made among observations, conclusions, inferences, and predictions;
Finding the Center of Gravity Using Plumb Lines	VA	SCI.4.4.1.e	The student will plan and conduct investigations in which predictions and inferences are made, and conclusions are drawn based on data from a variety of sources;
Finding the Center of Gravity Using Plumb Lines	VA	SCI.4.4.2.a	The student will plan and conduct investigations in which motion is described by an object's direction and speed;
Finding the Center of Gravity Using Plumb Lines	VA	SCI.4.4.2.b	changes in motion are related to force and mass;
Changing the Center of Gravity Using Moment Arms	VA	SCI.4.4.1.l	models are constructed to clarify explanations, demonstrate relationships, and solve needs; and
Changing the Center of Gravity Using Moment Arms	VA	SCI.4.4.1.m	current applications are used to reinforce science concepts.
Changing the Center of Gravity Using Moment Arms	VA	SCI.4.4.2.a	motion is described by an object's direction and speed;
Exploring the Extreme			
2010 Science			
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Virginia Science			
Grade 5			
Activity/Lesson	State	Standards	
Jet Propulsion	VA	SCI.5.5.1.e	The student will plan and conduct investigations in which independent and dependent variables are identified;
Jet Propulsion	VA	SCI.5.5.1.f	The student will plan and conduct investigations in which constants in an experimental situation are identified;
Jet Propulsion	VA	SCI.5.5.1.g	The student will plan and conduct investigations in which data are collected, recorded, analyzed, and communicated using proper graphical representations and metric measurements;

Vectoring	VA	SCI.5.5.1.i	The student will plan and conduct investigations in which inferences are made and conclusions are drawn;
Vectoring	VA	SCI.5.5.1.j	The student will plan and conduct investigations in which models are constructed to clarify explanations, demonstrate relationships, and solve needs
Center of Gravity, Pitch, Yaw	VA	SCI.5.5.1.g	The student will plan and conduct investigations in which data are collected, recorded, analyzed, and communicated using proper graphical representations and metric measurements;
Center of Gravity, Pitch, Yaw	VA	SCI.5.5.1.j	The student will plan and conduct investigations in which models are constructed to clarify explanations, demonstrate relationships, and solve needs
Exploring the Extreme			
2010 Science			
Standards of Learning			
Virginia Science			
Grade 6			
Activity/Lesson	State	Standards	
Jet Propulsion	VA	SCI.6.6.1.f	The student will plan and conduct investigations in which one variable is manipulated over time, using many repeated trials;
Jet Propulsion	VA	SCI.6.6.1.g	data are collected, recorded, analyzed, and reported using metric measurements and tools;
Jet Propulsion	VA	SCI.6.6.1.i	The student will plan and conduct investigations in which models and simulations are designed and used to illustrate and explain phenomena and systems
Vectoring	VA	SCI.6.6.1.e	The student will plan and conduct investigations in which a method is devised to test the validity of predictions and inferences;
Vectoring	VA	SCI.6.6.1.f	The student will plan and conduct investigations in which one variable is manipulated over time, using many repeated trials;
Vectoring	VA	SCI.6.6.1.g	The student will plan and conduct investigations in which data are collected, recorded, analyzed, and reported using metric measurements and tools;
Vectoring	VA	SCI.6.6.1.h	The student will plan and conduct investigations in which data are analyzed and communicated through graphical representation;

Center of Gravity, Pitch, Yaw	VA	SCI.6.6.1.b	The student will plan and conduct investigations in which precise and approximate measurements are recorded;
Center of Gravity, Pitch, Yaw	VA	SCI.6.6.1.c	The student will plan and conduct investigations in which scale models are used to estimate distance, volume, and quantity;
Center of Gravity, Pitch, Yaw	VA	SCI.6.6.1.g	The student will plan and conduct investigations in which data are collected, recorded, analyzed, and reported using metric measurements and tools;
Center of Gravity, Pitch, Yaw	VA	SCI.6.6.1.i	The student will plan and conduct investigations in which models and simulations are designed and used to illustrate and explain phenomena and systems
Exploring the Extreme			
2010 Science			
Standards of Learning			
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2010 Science			
Standards of Learning			
Virginia Science			
Grades 7-8 (Physical Science)			
Activity/Lesson	State	Standards	
Jet Propulsion	VA	SCI.7-8.PS.1.f	The student will plan and conduct investigations in which independent and dependent variables, constants, controls, and repeated trials are identified;
Jet Propulsion	VA	SCI.7-8.PS.1.g	The student will plan and conduct investigations in which data tables showing the independent and dependent variables, derived quantities, and the number of trials are constructed and interpreted;
Jet Propulsion	VA	SCI.7-8.PS.1.k	The student will plan and conduct investigations in which research methods are used to investigate practical problems and questions;
Jet Propulsion	VA	SCI.7-8.PS.1.m	The student will plan and conduct investigations in which models and simulations are constructed and used to illustrate and explain phenomena
Vectoring	VA	SCI.7-8.PS.1.e	The student will plan and conduct investigations in which numbers are expressed in scientific notation where appropriate;
Vectoring	VA	SCI.7-8.PS.1.f	c independent and dependent variables, constants, controls, and repeated trials are identified;

Vectoring	VA	SCI.7-8.PS.1.g	The student will plan and conduct investigations in which data tables showing the independent and dependent variables, derived quantities, and the number of trials are constructed and interpreted;
Vectoring	VA	SCI.7-8.PS.1.k	The student will plan and conduct investigations in which research methods are used to investigate practical problems and questions;
Vectoring	VA	SCI.7-8.PS.1.m	models and simulations are constructed and used to illustrate and explain phenomena
Center of Gravity, Pitch, Yaw	VA	SCI.7-8.PS.1.m	The student will plan and conduct investigations in which models and simulations are constructed and used to illustrate and explain phenomena; and
Fuel Efficiency	VA	SCI.7-8.PS.1.h	The student will plan and conduct investigations in which data tables for descriptive statistics showing specific measures of central tendency, the range of the data set, and the number of repeated trials are constructed and interpreted;
Fuel Efficiency	VA	SCI.7-8.PS.1.i	The student will plan and conduct investigations in which frequency distributions, scatterplots, line plots, and histograms are constructed and interpreted;
Fuel Efficiency	VA	SCI.7-8.PS.1.m	The student will plan and conduct investigations in which models and simulations are constructed and used to illustrate and explain phenomena